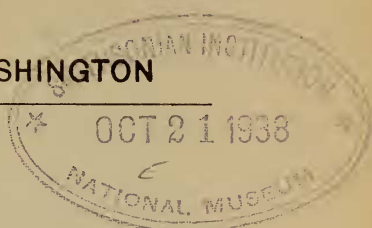


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SOME AMPHIBIANS FROM FORMOSA AND THE RYU  
KYU ISLANDS, WITH DESCRIPTION  
OF A NEW SPECIES.

BY J. LINSLEY GRESSITT,

*Museum of Vertebrate Zoölogy, University of California, Berkeley.*

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The species included in the following list were collected on my two trips to Formosa and the Ryu Kyu (Loochoo) Islands in 1932 and 1934. Only eleven species were collected, for no particular effort was made to collect amphibians. However, one of the species appears to be new to science, and is herein described.

The localities at which collecting was done on the Island of Formosa have been described by the writer in an article entitled "Notes on Collecting in Formosa" (The Entomological World, Tokyo, 4: 711-727, 1 map, 1 pl., 5 figs., 1936). In the Ryu Kyu Archipelago, between Formosa and Japan, collecting was done on Iriomote Island (lat. 24° 20' N, long. 123° 40' E); Ishigakijima (Yaeyama Island) (lat. 24° 25' N, long. 124° 20' E); Miyako Island (lat. 24° 42' N, long. 125° 28' E); Okinawa Island (lat. 26° 30' N, long. 127° 45' E); and Amami-Oshima Island (lat. 28° 15' N, long. 129° 25' E).

The writer is indebted to Dr. Joseph Grinnell for the privilege of reporting on this collection, which is deposited, with others made by the writer, in the Museum of Vertebrate Zoölogy of the University of California at Berkeley.

SALAMANDRIDAE.

*Triturus ensicaudus* (Hallowell).

*Triton subcristatus*, Hallowell, 1860, Proc. Phila. Acad.: 494 (part, not of Schlegel).

*Triton ensicauda* Hallowell, 1860, Proc. Phila. Acad.: 494 (Amakarima and Amami-Oshima Islands).

*Molge pyrrhogaster* var. *ensicauda*, Boulenger, 1887, Proc. Zool. Soc. London : 150.

*Molge pyrrhogastra* var. *ensicaudatus*, Okada, 1891, Cat. Vert. Japan : 65 (Okinawa).

*Diemyctylus ensicauda*, Stejneger, 1907, U. S. Nat. Mus., Bull. 58 : 21-24, figs. 9-15.

A single specimen was collected (No. 22415, Mus. Vert. Zoöl.) in an artificial pond in a stream behind Nase (Naze) at an altitude of 90 meters, Amami-Oshima Island, N. Ryu Kyu (Loochoo) Islands, July 9, 1932. Numerous individuals were present in the same pond.

The example measures 145 mm. from snout to end of tail, and 64 mm. from snout to anterior end of vent. The head is 13.5 mm. broad at jaw angles. The color is pitchy brown above and reddish orange beneath, with an orange stripe along each side of body and tail.

The stomach contained amphibian eggs, presumably of the same species, and some plant material.

*Distribution.*—Amami-Oshima and Okinawa Islands (northern and central Ryu Kyu Archipelago).

*Japanese name.*—Shiriken-imori.

#### BUFONIDAE.

##### *Bufo bankorensis* Barbour.

*Bufo bankorensis* Barbour, 1908, Bull. Mus. Comp. Zoöl., 51 (12): 323 (Bankoro, C. Formosa); 1909, Proc. New Engl. Zoöl. Club, 4 : 55, pl. 6; Okada, 1931, Tailless Batr. Japanese Emp. : 53-56, pl. 4, fig. 1, pl. 19, fig. 7, pl. 23, fig. 2, text figs. 24-25.

Thirteen specimens (Nos. 22511-23, Mus. Vert. Zoöl.) were collected in the mountains of Formosa in 1934; three at Arisan, alt. 2,150 meters, south-central Formosa, May 27; two at Suisha, by Lake Candidius, alt. 750 meters, C. Formosa, June 2; three at Sozan, alt. 450 meters, north of Taihoku, N. Formosa, June 30; one at Rokki (Rokkiri), alt. 350 meters, SW. Formosa, May 17; one at Bukai, alt. 1,200 meters, north of Lake Candidius, C. Formosa, June 15; two at Taiheizan, alt. 1,500 meters, NE. Formosa, July 7; and one at Rimogan, alt. 800 meters, south of Urai, N. Formosa, July 23, 1934.

The largest specimen (No. 22513; female; Arisan) measures 110 mm. from snout to vent, and 43 mm. across head at jaw angles; the tibio-tarsal articulation reaches slightly anterior to the posterior end of the paratoid, which latter is longer than its distance from tip of snout, and is broadly elliptical in shape.

Stomach contents included the following: a cockroach (*Panesthia*); a scarabaeid larva; ants (several stomachs); melolonthid-, cetoniid-, elaterid-, carabid-, staphylinid-, lagriid-, tenebrionid-, and chrysomelid-beetles; a polydesmoid millipede; plant material; small stones.

*Distribution.*—Mountains of Formosa; southern and western China: Fukien, Kwangtung (?), Kwangsi, and Szechuan provinces.

*Japanese name.*—Bankoro-hikigaeru.

*Bufo bufo miyakonis* Okada.

*Bufo bufo miyakonis* Okada, 1931, Tailless Batr. Japanese Emp. : 47-50, pl. 3, figs. 1-2, pl. 18, fig. 3, pl. 22, fig. 5, text figs. 19-20.

A single example (No. 22510, Mus. Vert. Zoöl.) was collected in a dry ditch by a sugar cane field on Miyako Island, at an altitude of about 35 meters, S. Ryu Kyu Islands, August 29, 1934.

The specimen is a juvenile, measuring 34 mm. from snout to vent. The head is 15.5 mm. broad at jaw angles. The parotoid is shorter than its distance from tip of snout, and there is no sharp ridge above eye. The color is variegated light and dark brown, somewhat buffy on head.

*Distribution.*—Restricted to Miyako Island.

*Japanese name.*—Miyako-hikigaeru.

*Bufo melanostictus* Schneider.

*Bufo melanostictus* Schneider, 1799, Hist. Amph., 1 : 216; Stejneger, 1907, U. S. Nat. Mus., Bull. 58 : 72-75, figs. 56-61; Okada, 1931, Tailless Batr. Japanese Emp. : 50-53, pl. 4, fig. 2, pl. 18, fig. 3, pl. 23, fig. 1, text figs. 21-23.

A single specimen (No. 22524, Mus. Vert. Zoöl.) was collected at Rokki (Rokkiri), alt. 300 meters, SW. Formosa, May 13, 1934.

The specimen measures 85 mm. from snout to vent, and 32 mm. across head at jaw angles. The sharp ridge on each side of head from tip of snout to anterior end of paratoid is characteristic.

The stomach contained remains of the following: scarabaeid- (*Anomala* and *Serica?*), carabid-, cicindelid- (*C. sexpunctata*), and tenebrionid-beetles; water bugs (*Sphaeroderma* and *Corixa?*); ant; braconid wasp; reduviid bug and a moth.

*Distribution.*—India; Malay Archipelago; peninsula of southeastern Asia; S. China; Hainan Id.; Hong Kong and Formosa.

*Japanese name.*—Heriguro-hikigaeru.

RANIDAE.

*Rana gracilipes*, new species.

*Type.*—Gravid female; No. 23108, Mus. Vert. Zoöl.; from Kuraru, alt. 150 meters, Koshun district, near South Cape, Formosa, Aug. 10, 1934, J. L. Gressitt (orig. no. 197).

*Diagnosis.*—A small frog with narrow head and slender arms and legs; heels barely touching when legs folded at right angles to body; tibio-tarsal articulation reaching to tympanum; eye as long as snout; fingers and toes slender, webbed only at base; skin smooth on most of surface.

*Description of type.*—Slender, attenuated anteriorly. Head narrower than shoulders, longer than broad; snout narrow, truncate, projecting; canthus rostralis moderately distinct; lores subvertical; external nostril much closer to tip of snout than to eye; eye practically as long as its distance from tip of snout; inter-nasal distance less than inter-orbital

distance, which latter is greater than width of upper eyelid. Internal nares transversely oval; vomerine teeth not distinguishable. Tympanum minute, indistinct, about one-third diameter of eye, separated from eye by a distance equal to its diameter. No dorso-lateral fold. Arms long and slender; fingers slender and blunt at tips, first shorter than second, which latter is two-thirds as long as third, third much longer than fifth, subarticular tubercles distinct but not greatly swollen; toes webbed only at extreme bases, blunt at apices, third much longer than fifth; inner and outer metatarsal tubercles moderately large, indistinct; tibio-tarsal articulation barely reaching tympanum; tibia contained two and one-half times in distance from snout to vent, nearly as long as foot. Heels not touching when legs folded at right angles to body. Skin largely smooth, microscopically granular; some minute tubercles around vent and bases of thighs.

Color dull chocolate brown above, with minute white dots on flanks and femora; lips and sides mottled brown and bluish white; undersurfaces dirty white mottled with brown.

*Measurements.*—Length, from snout to vent, 27 mm.; length of head, 8; breadth of head, 7.5; nostril to eye, 2; length of eye, 2.7; diameter of tympanum, 1.2; length of fore limb, 19; hand, 7; hind limb, 36; tibia, 11; foot, 12.

*Comparisons.*—Differs from *Rana adenopleura* Boulenger in lacking the dorso-lateral fold, in having the tympanum smaller and less distinct, the limbs, fingers and toes much more slender, the toes less webbed, the metatarsal tubercles less prominent and the skin much smoother. Differs from *Rana guentheri* Boulenger in being much smaller, in lacking the dorso-lateral fold, in having the appendages more slender, the toes less extensively webbed, the eyes and tympanum smaller, the head narrower and less acute apically, and the canthus rostralis less distinct.

*Notes.*—The ovaries contained many brownish eggs, measuring about 1.4 mm. in diameter. The stomach contained several ants, about 4.5 mm. long.

*Distribution.*—Southern Formosa.

*Japanese name.*—Hosoashi-gaeru.

*Rana limnocharis* Wiegmann.

*Rana limnocharis* Wiegmann, 1835, Nova Acta Acad. Leop. Carol., **17** (1) : 255; Stejneger, 1907, U. S. Nat. Mus., Bull. **58** : 127-131, figs. 107-110; Okada, 1931, Tailless Batr. Japanese Emp.: 138-146, pl. 7, fig. 1, pl. 19, fig. 5, pl. 26, fig. 4, text figs. 62-63.

*Rana gracilis*, Wiegmann, 1835, Nova Acta Acad. Leop. Carol., **17** (1) : 257 (Cape Syng-more, China) (not of Gravenhorst).

*Rana vittigera*, Günther, 1858, Cat. Batr. Sal. Brit. Mus. : 9 (not of Wiegmann).

Nine specimens (Nos. 22792-800, Mus. Vert. Zoöl.) were collected in 1934: six on Iriomote Island, S. Ryu Kyu Is., Aug. 20-26; one on Ishigaki Island (Yaeyama), S. Ryu Kyu Is., Aug. 27; one at Rokki, alt. 300 meters, SW. Formosa, May 16; and one at Suisha, alt. 750 meters, by Lake Candi-dius, C. Formosa, June 2.

The largest specimen (Ishigaki Id.) measures 54 mm. from snout to vent. The stomach contents included remains of small beetles and an acridiid grasshopper.

*Distribution*.—India and Malay Archipelago to Japan, through S. China, Hainan Id., Formosa and the Ryu Kyu Islands.

*Japanese name*.—Numa-gaeru.

*Rana swinhoana* Boulenger.

*Rana swinhoana* Boulenger, 1903, Ann. Mag. Nat. Hist., (7) 12 : 556; 1909, op. cit., (8) 4 : 495; Stejneger, 1907, U. S. Nat. Mus., Bull. 58 : 132; 1910, Proc. U. S. Nat. Mus., 38 : 95.

A single example (No. 23090, Mus. Vert. Zoöl.) was caught in a swiftly flowing stream near Bukai, alt. 950 meters, north of Lake Candidius, C. Formosa, June 13, 1934.

The specimen measures 83 mm. from snout to vent, and 30 mm. across corners of mouth. Color dusky brown above and sooty white beneath. The stomach contained the remains of a reduviid bug and an insect grub.

*Distribution*.—Lower mountains of central and south-central Formosa.

*Japanese name*.—Suinho-gaeru.

POLYPEDATIDAE.

*Polypedates moltrechti* (Boulenger).

*Rhacophorus moltrechti* Boulenger, 1908, Ann. Mag. Nat. Hist., (8) 2 : 221; Okada, 1931, Tailless Batr. Japanese Emp. : 192-193, pl. 17, fig. 1, text fig. 90.

*Polypedates moltrechti*, Stejneger, 1910, Proc. U. S. Nat. Mus., 38 : 97; Van Denburgh, 1912, Proc. Calif. Acad. Sci., (4) 3 : 203.

A single example (No. 23169, Mus. Vert. Zoöl.) was taken at Arisan, alt. 2,000 meters, C. Formosa, May 27, 1934.

The specimen measures 47 mm. from snout to vent, and 18.5 mm. in breadth of head at angles of mouth. The color is dark green above and white beneath, with sides of body and hind limbs spotted with black.

*Distribution*.—Mountains of Formosa.

*Japanese name*.—Morutorekito-aogaeru.

*Polypedates owstoni* Stejneger.

*Polypedates owstoni* Stejneger, 1907, U. S. Nat. Mus., Bull. 58 : 149-150 (Ishigaki Id.).

*Polypedates schlegelii owstoni*, Van Denburgh, 1912, Proc. Calif. Acad. Sci., (4) 3 : 202.

*Rhacophorus owstoni*, Okada, 1931, Tailless Batr. Japanese Emp. : 194-196, pl. 16, fig. 1; pl. 29, fig. 2, text fig. 91.

Four specimens (Nos. 23170-73, Mus. Vert. Zoöl.) were collected: three on Iriomote Island, Aug. 23-26, and one on Ishigaki Island (Yaeyama), August 27, 1934, S. Ryu Kyu Islands.

The largest specimen measures 52 mm. from snout to vent, and 18 mm.

across angles of mouth. The color is blue-green, or grayish green mottled with grayish black. Stomach contents included a reduviid bug, a cerambycid beetle (*Apomecyna?*) and other insect remains.

*Distribution.*—S. Ryu Kyu Archipelago and Formosa.

*Japanese name.*—Osuton-aogaeru.

*Polypedates robustus* (Boulenger).

*Rhacophorus robustus* Boulenger, 1909, Ann. Mag. Nat. Hist., (8) 4 : 494 (Kankau, Alikang, and Kosempo, Formosa); Okada, 1931, Tailless Batr. Japanese Emp. : 196–198, pl. 17, fig. 4, pl. 21, fig. 4, pl. 29, fig. 3.

*Polypedates robustus*, Stejneger, 1910, Proc. U. S. Nat. Mus., 38 : 97; Van Denburgh, 1912, Proc. Calif. Acad. Sci., (4) 3 : 206.

Three specimens (Nos. 23180–82, Mus. Vert. Zoöl.) were collected at Rokki (Rokkiri), alt. 350 meters, SW. Formosa, May 13–17, 1934.

The largest specimen, a gravid female, measures 70 mm. from snout to vent and 26 mm. in breadth of head at mouth angles. The color is speckled grayish green with a darker band across top of head at upper eyelids; ventral surfaces dirty white. The stomach included insect wings.

*Distribution.*—Formosa.

*Japanese name.*—Muku-aogaeru.

MICROHYLIDAE.

*Microhyla ornata* (Dum. and Bibr.).

*Engystoma ornata* Duméril and Bibron, 1841, Erpét. Gén., 8 : 745 (Malabar Coast).

*Microhyla ornata*, Boulenger, 1882, Cat. Batr. Sal. Brit. Mus. : 175; Pope, 1931, Bull. Amer. Mus. Nat. Hist., 61 : 597.

*Microhyla fissipes* Boulenger, 1884, Ann. Mag. Nat. Hist., (5) 13 : 397 (Formosa); Okada, 1931, Tailless Batr. Japanese Emp. : 71–74, pl. 7, fig. 3, pl. 18, fig. 7, pl. 23, fig. 6, text figs. 33–34.

*Microhyla okinavensis* Stejneger, 1901, Proc. Biol. Soc. Wash., 14 : 189 (Okinawa, Ryu Kyu Islands).

*Microhyla undulata* Brown, 1902, Proc. Phila. Acad. Sci. : 186 (Loochoo Is.).

Two examples (Nos. 23214 and 23256, Mus. Vert. Zoöl.) were collected, the former at Kuraru, alt. 150 meters, Koshun district, S. Formosa, August 8; 1934, the latter on Iriomote Island, S. Ryu Kyu Islands, August 23, 1934.

The specimen from Formosa (gravid female) measures 30.5 mm. from snout to vent, and 7.5 mm. in breadth of head at angles of mouth. Stomach included numerous ants and an acridiid grasshopper nymph.

*Distribution.*—India and Malay Peninsula to the Ryu Kyu Islands, through S. China, Hainan Id. and Formosa.

*Japanese name.*—Hime-amagaeru.